Home made Sphere Recharging Jig
In this day and age the cost of a new sphere has reduced dramatically from the sort of prices we paid 10 years ago. As such, on cost grounds, it is debatable whether it's worth recharging spheres at all. From an environmental point of view, however, there's usually still plenty of life left in a sphere even after most of the gas has gone. I made this jig 15 years ago when a new sphere was £35-£40 and therefore well worth it.

Recharger Body

The frame of the jig is made from 10mm thick black steel plate. It has 5 sides welded at all corners. The photo shows a sphere in position ready to be refilled with Nitrogen Gas. The large threaded bolt at the left hand side is what keeps the sphere in position whilst being recharged.

To recharge the sphere the first thing you have to do is slacken the plug on the top of the sphere. If you haven't tested the sphere for residual pressure you must assume it is fully charged to be safe. I've found that the best way to slacken the plug is to turn the sphere upside down and grip the plug in the vice. Then, using a sphere removing tool, grip the sphere and turn through 1 revolution. Remove the sphere from the vice and turn up the right way. Grip the sphere in the vice again. Using a pair of molegrips slowly undo the plug. The residual gas pressure will begin to leak past the plug threads but most will still be retained by the o-ring on the underside of the plug.

Photo1

You can either let it bleed away slowly like this for an hour or two or you can speed up the process. Keep turning the plug anticlockwise. When the o-ring can no longer keep contact with the sphere and the plug at the same time it

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releases the residual gas suddenly. This will take you by surprise the first time you do it. There's no danger since the plug still has most of its threads screwed into the top of the sphere and therefore it can't go anywhere. It will be obvious when all the gas pressure has been released. The plug will go slack and you'll be able to turn it with your fingers.

The top of the plug is then machined with a 6mm diameter end mill set in a pillar drill to cut two small recessed dogs in the surface. These recesses are used to grip the plug under pressure and screw it back into the sphere.

Photo2

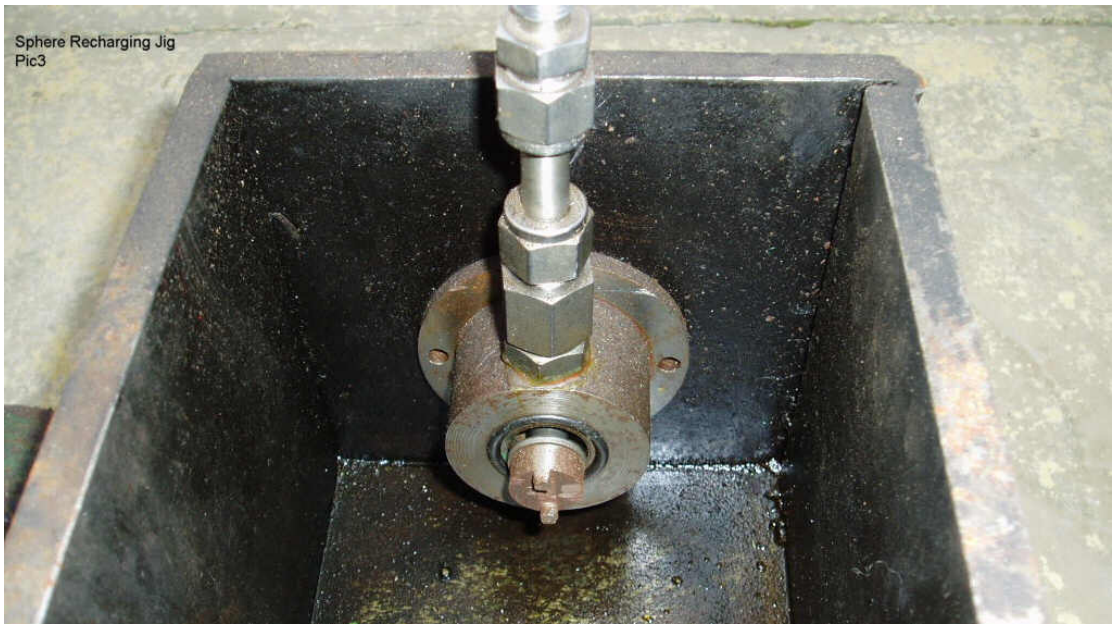

Photo3

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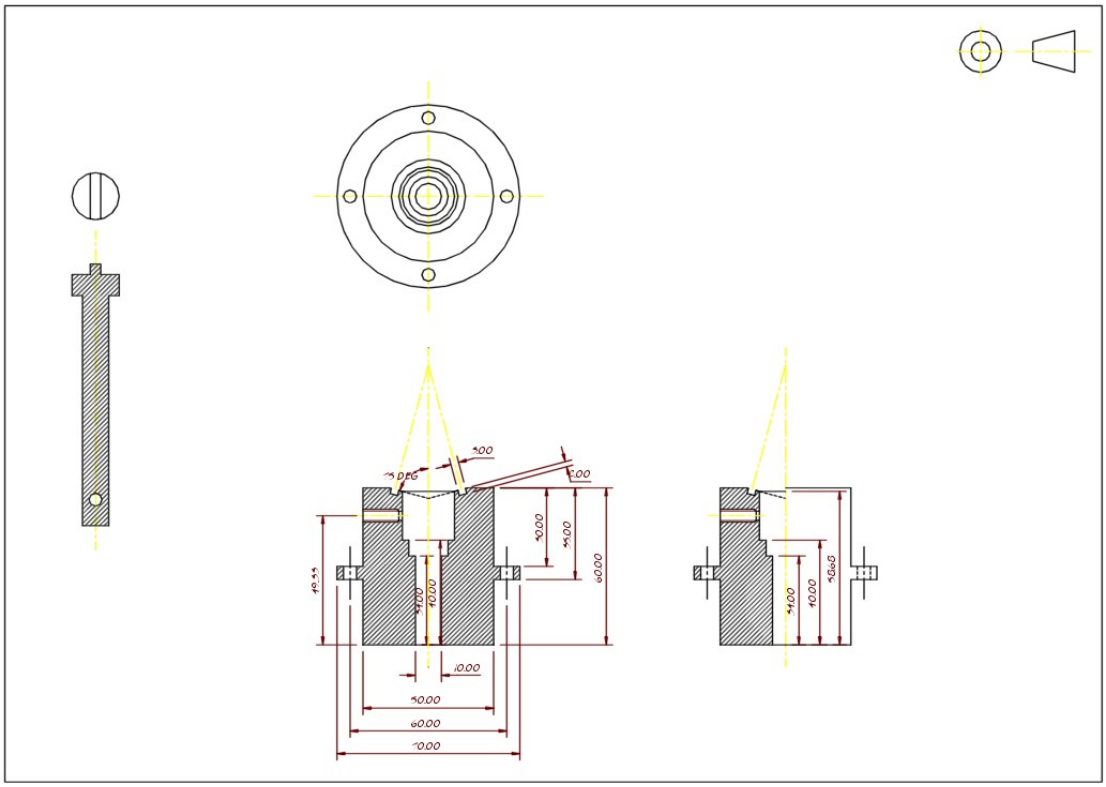
Here’s a drawing of the clever bit. It has been inserted at a reasonably high resolution so it should be expandable.



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